

Madigan Army Medical Center

Musculoskeletal Treatment Guidelines

SHIN SPLINT

Diagnosis/Definition

- Inflammation due to repetitive stress of the broad proximal portion of any of the musculotendinous units originating from the tibia.
- Symptoms of overuse injury are precipitated by initiation of training, an increase in training intensity or a change in surface or equipment. The mechanism for overuse injury is overload of forces on the muscle, tendon, or bone, which leads to an inflammatory reaction.

Initial Diagnosis and Management

- History and physical examination.
- Rest of the affected muscle-tendon bone unit
- Use of crutches, bracing or casts as needed
- NSAIDs may be beneficial
 - Adults - 200 to 400 milligrams (mg) every four to six hours as needed for up to 2 weeks. Example: Ibuprofen
 - Take tablet or capsule forms of these medicines with a full glass (8 ounces) of water.
 - Do not lie down for about 15 to 30 minutes after taking the medicine. This helps to prevent irritation that may lead to trouble in swallowing.
 - To lessen stomach upset, these medicines should be taken with food or an antacid.
- Encourage active range of motion.
- Appropriate restrictions of activity.

Ongoing Management and Objectives

- Rest is individualized depending upon severity
- Immobilization should be utilized if simple weight bearing (walking) is painful.
- The duration of rest varies from 1-2 days for mild shin splints to several months for severe stress fractures.
- Ice for 10 to 15 mins with hourly reapplication.
- Elevate leg frequently with compressive wraps.
- Slow and sustained active stretches when no pain is present

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Indication a profile is needed

- Any limitations that affect strength, range of movement, and efficiency of feet, legs, lower back and pelvic girdle.
- Slightly limited mobility of joints, muscular weakness, or other musculo-skeletal defects that may prevent moderate marching, climbing, timed walking, or prolonged effect.
- Defects or impairments that require significant restriction of use.

Specifications for the profile

- Weeks 1-8
 - No running and jumping
 - No rucking
 - Walking to tolerance
 - Swimming recommended

Patient/Soldier Education or Self care Information

- See attached sheet
- Demonstrate deficits that exist
 - Describe/show soldier his/her limitations
- Explain injury and treatment methods
 - Use diagram attached to describe injury, location and treatment.
- Instruct and demonstrate rehab techniques
 - Demonstrate rehab exercises as shown in attached guide
 - Warm up before any sports activity
 - Participate in a conditioning program to build muscle strength
 - Do stretching exercises daily
- Ask the patient to demonstrate newly learned techniques and repeat any other instructions.
- Fine tune patient technique
- Correct any incorrect ROM/stretching demonstrations or instructions by repeating and demonstrating information or exercise correctly.
- Encourage questions

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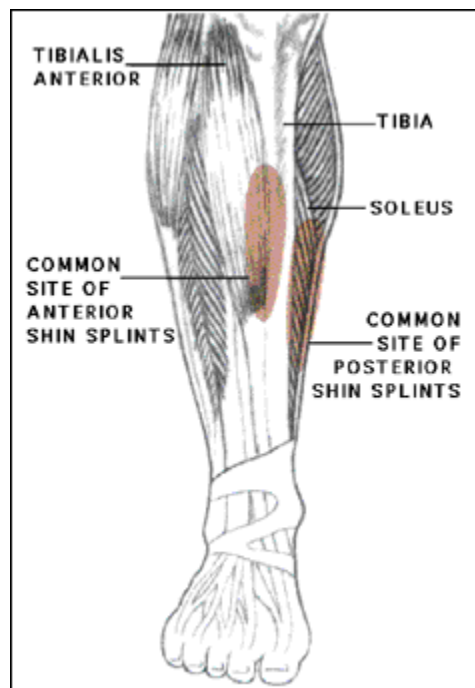
- Ask soldier if he or she has any questions
- Give supplements such as handouts
- Schedule follow up visit
 - If pain persists
 - The pain does not improve as expected
 - Patient is having difficulty after three days of injury
 - Increased pain or swelling after the first three days
 - Patient has any questions regarding care

Indications for referral to Specialty Care

- To Physical Therapy: Routine referral for rehabilitation.

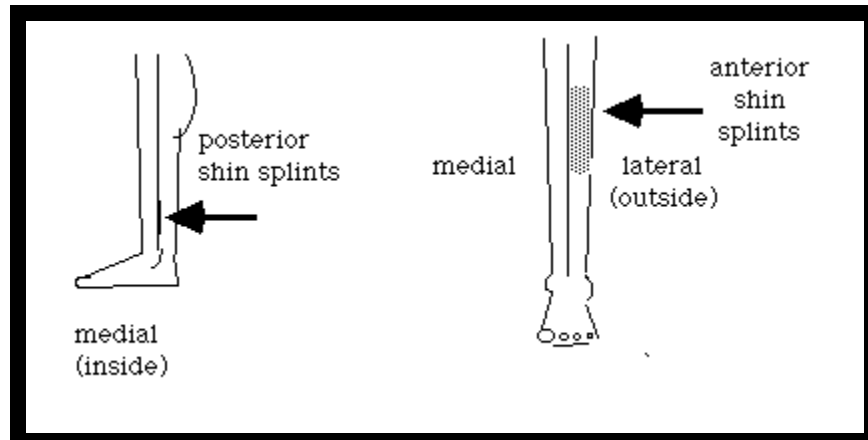
Referral criteria for Return to Primary Care

- Completed specialty care.



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Exercises

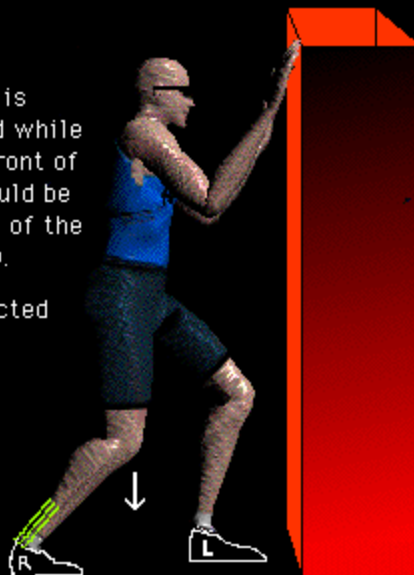
Keep the knee straight and heel on the floor. Gradually lean forward -- usually against a wall-- until a gentle pull is felt in the upper 1/3 or 1/2 of the lower leg (knee to mid-calf)



Soleus Stretch

The right knee is bent and is pushed towards the ground while staying over and just in front of the foot. A gentle pull should be felt in the lower one third of the leg (highlighted in yellow).

The knee can then be directed medially and laterally to stretch different areas.



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PHYSICAL PROFILE <small>For use of this form, see AR 40-501, the proponent agency is the Office of The Surgeon General</small>																																				
1. MEDICAL CONDITION SHIN SPLINTS					2. <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">P</td> <td style="width: 20px;">U</td> <td style="width: 20px;">L</td> <td style="width: 20px;">H</td> <td style="width: 20px;">E</td> <td style="width: 20px;">S</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		P	U	L	H	E	S																								
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3. ASSIGNMENT LIMITATIONS ARE AS FOLLOWS WEEKS 1 -4 , NO RUNNING, JUMPING AND MARCHING, RECOMMEND SWIMMING, WALKING TO TOLERANCE.					CODES																															
4. THIS PROFILE IS <input type="checkbox"/> PERMANENT <input checked="" type="checkbox"/> TEMPORARY EXPIRATION DATE:																																				
5. THE ABOVE STATED MEDICAL CONDITION SHOULD NOT PREVENT THE INDIVIDUAL FROM DOING THE FOLLOWING ACTIVITIES <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Groin Stretch</td> <td><input checked="" type="checkbox"/> Thigh Stretch</td> <td><input checked="" type="checkbox"/> Lower Back Stretch</td> <td><input checked="" type="checkbox"/> Neck & Shoulder Stretch</td> <td><input checked="" type="checkbox"/> Neck Stretch</td> </tr> <tr> <td><input checked="" type="checkbox"/> Hip Raise</td> <td><input checked="" type="checkbox"/> Quads Stretch & Bal.</td> <td><input checked="" type="checkbox"/> Single Knee to Chest</td> <td><input checked="" type="checkbox"/> Upper Back Stretch</td> <td><input checked="" type="checkbox"/> Ankle Stretch</td> </tr> <tr> <td><input checked="" type="checkbox"/> Knee Bender</td> <td><input checked="" type="checkbox"/> Calf Stretch</td> <td><input checked="" type="checkbox"/> Straight Leg Raise</td> <td><input checked="" type="checkbox"/> Chest Stretch</td> <td><input checked="" type="checkbox"/> Hip Stretch</td> </tr> <tr> <td><input type="checkbox"/> Side-Straddle Hop</td> <td><input checked="" type="checkbox"/> Long Sit</td> <td><input checked="" type="checkbox"/> Elongation Stretch</td> <td><input checked="" type="checkbox"/> One-Arm Side Stretch</td> <td><input checked="" type="checkbox"/> Upper Body Wt Tng</td> </tr> <tr> <td><input type="checkbox"/> High Jump</td> <td><input checked="" type="checkbox"/> Hamstring Stretch</td> <td><input checked="" type="checkbox"/> Turn and Bounce</td> <td><input checked="" type="checkbox"/> Two-Arm Side Stretch</td> <td><input checked="" type="checkbox"/> Lower Body Wt Tng</td> </tr> <tr> <td><input type="checkbox"/> Jogging in Place</td> <td><input checked="" type="checkbox"/> Hams. & Calf Stretch</td> <td><input checked="" type="checkbox"/> Turn and Bend</td> <td><input checked="" type="checkbox"/> Side Bender</td> <td><input checked="" type="checkbox"/> All</td> </tr> </table>							<input checked="" type="checkbox"/> Groin Stretch	<input checked="" type="checkbox"/> Thigh Stretch	<input checked="" type="checkbox"/> Lower Back Stretch	<input checked="" type="checkbox"/> Neck & Shoulder Stretch	<input checked="" type="checkbox"/> Neck Stretch	<input checked="" type="checkbox"/> Hip Raise	<input checked="" type="checkbox"/> Quads Stretch & Bal.	<input checked="" type="checkbox"/> Single Knee to Chest	<input checked="" type="checkbox"/> Upper Back Stretch	<input checked="" type="checkbox"/> Ankle Stretch	<input checked="" type="checkbox"/> Knee Bender	<input checked="" type="checkbox"/> Calf Stretch	<input checked="" type="checkbox"/> Straight Leg Raise	<input checked="" type="checkbox"/> Chest Stretch	<input checked="" type="checkbox"/> Hip Stretch	<input type="checkbox"/> Side-Straddle Hop	<input checked="" type="checkbox"/> Long Sit	<input checked="" type="checkbox"/> Elongation Stretch	<input checked="" type="checkbox"/> One-Arm Side Stretch	<input checked="" type="checkbox"/> Upper Body Wt Tng	<input type="checkbox"/> High Jump	<input checked="" type="checkbox"/> Hamstring Stretch	<input checked="" type="checkbox"/> Turn and Bounce	<input checked="" type="checkbox"/> Two-Arm Side Stretch	<input checked="" type="checkbox"/> Lower Body Wt Tng	<input type="checkbox"/> Jogging in Place	<input checked="" type="checkbox"/> Hams. & Calf Stretch	<input checked="" type="checkbox"/> Turn and Bend	<input checked="" type="checkbox"/> Side Bender	<input checked="" type="checkbox"/> All
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6. AEROBIC CONDITIONING EXERCISES <input checked="" type="checkbox"/> Walk at Own Pace and Distance <input checked="" type="checkbox"/> Run at Own Pace and Distance <input checked="" type="checkbox"/> Bicycle at Own Pace and Distance <input checked="" type="checkbox"/> Swim at Own Pace and Distance <input checked="" type="checkbox"/> Walk or Run in Pool at Own Pace <input type="checkbox"/> Unlimited Walking <input type="checkbox"/> Unlimited Running <input type="checkbox"/> Unlimited Bicycling <input type="checkbox"/> Unlimited Swimming <input type="checkbox"/> Run at Training Heart Rate for ____ Min. <input type="checkbox"/> Bicycle at Training Heart Rate for ____ Min. <input type="checkbox"/> Swim at Training Heart Rate for ____ Min.		7. FUNCTIONAL ACTIVITIES <input checked="" type="checkbox"/> Wear Backpack (40 Lbs.) <input checked="" type="checkbox"/> Wear Helmet <input checked="" type="checkbox"/> Carry Rifle <input checked="" type="checkbox"/> Fire Rifle With Hearing Protection <input type="checkbox"/> KP/Mopping/Mowing Grass <input type="checkbox"/> Marching Up to <u> 2 </u> Miles <input checked="" type="checkbox"/> Lift Up to <u> 15 </u> Pounds <input type="checkbox"/> All PHYSICAL FITNESS TEST <input type="checkbox"/> Two Mile Run <input type="checkbox"/> Walk <input checked="" type="checkbox"/> Push-Ups <input checked="" type="checkbox"/> Swim <input checked="" type="checkbox"/> Sit-Ups <input type="checkbox"/> Bicycle		8. TRAINING HEART RATE FORMULA <div style="display: flex; justify-content: space-between;"> MALES 220 FEMALES 225 </div> <div style="display: flex; justify-content: space-between;"> MINUS (-) AGE MINUS (-) RESTING HEART RATE </div> <div style="display: flex; justify-content: space-between;"> TIMES (X) % INTENSITY PLUS (+) RESTING HEART RATE </div> <hr style="width: 100%;"/> <div style="font-size: small;"> 50% EXTREMELY POOR CONDITION 60% HEALTHY, SEDENTARY INDIVIDUAL 70% MODERATELY ACTIVE, MAINTENANCE 80% WELL TRAINED INDIVIDUAL </div>																																
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PATIENT'S IDENTIFICATION (For typed or written entries give: Name (last, first, middle); grade; SSN; hospital or medical facility)				UNIT ISSUING CLINIC AND PHONE NUMBER DISTRIBUTION UNIT COMMANDER - ORIGINAL & 1 COPY HEALTH RECORD JACKET - 1 COPY CLINIC FILE - 1 COPY MILPO - 1 COPY																																

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PATIENT INFORMATION

INTRODUCTION TO SHIN SPLINTS

A shin splint is the most common cause of exercise-induced leg pain encountered by athletes of all levels. In the past the term shin splint has been used to describe all forms of pain in the lower leg. Misleading terms such as compartment syndrome and stress fractures have all been used to describe a shin splint. However, a shin splint is a very specific problem. It is essentially an inflammatory reaction involving the deep tissues of the lower leg and may involve tendons & muscles. The inflammatory reaction occurs at the point where the deep tissues insert into the inside (medial) or front (anterior) aspect of the leg bone (tibia). The most appropriate terms that can be used to describe a shin splint are Tibial stress syndrome or tibial fasciitis. There are two forms of shin splints, a Medial (inner aspect) and Anterior (outer aspect) shin splint.

SYMPTOMS

- When a patient is suffering from a medial shin splint the pain and the tenderness will be present on the inner aspect of the leg.
- In an anterior shin splint, pain and tenderness is present on the front and outer aspect of the leg.
- In both cases, running and walking may be extremely painful. In severe cases, even light weight bearing may be painful.
- Tenderness is usually present between 3-13 cm above the foot.

CAUSES

- Over training.
- Mechanical problems with the feet such as "over pronation". Over pronation can be simply described as a condition which causes your arches to flatten out when you stand up. This causes your ankles to roll in towards each other and disturbs your normal walking pattern. If a foot over pronates the structures of the leg are stretched and put under stress, which increases the likelihood of that structure being injured.
- Tight calve muscles.
- A young novice runner training for long periods on hard roads and in poor physical condition.
- Training on hard surfaces such as concrete.
- Improper shoes, inadequate shock absorption.
- Excessive rotation of the hip.

WHAT YOU CAN DO

- Purchase shock absorbing running shoes.

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- Decrease training immediately.
- The use of crutches may be necessary to ensure there is non-weight bearing
- Review stretching exercises may be necessary.
- Light swimming may help to maintain fitness.
- Do not train downhill, this can aggravate the condition.
- Purchase shin splint insoles.

Input was provided by:

- Occupational Therapy Clinic
- Physical Therapy Clinic
- Orthopedic Clinic
- Family Practice Clinic
- Okubo Clinic
- 555 Engineers
- 1st Brigade
- 3rd Brigade
- 62nd Medical Brigade

POC:

- Outcome Management

References:

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- Lillegard, Rucker. (1999). The Handbook of Sports Medicine. A symptom-oriented approach, 2nd Edition. Butterworth-Heinemann Medical: Burlington, MA.
- Baechle, Thomas, Earle, Roger. (2000) Essentials of Strength Training and Conditioning, 2nd Edition. Human Kinetics Pub: Champaign, IL
- Schenck, Robert, Jr. et al. (1999). Athletic Training and Sports Medicine, 3rd Edition. American Academy of Orthopedics: Tucson, AZ.
- <http://www.rice.edu/~jenky/sports/shin.html>
- http://www.ourfootdoctor.com/yourfeet_shin.shtml
- <http://www.curefootpain.co.uk/shin.htm>